

# A CENSUS OF AUSTRALIAN REPTILIAN ENTOZOA.

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THE present paper is the result of an attempt to collect references to the occurrence of entozoa and haematozoa in Australian reptiles, the term Australian being used in a wide sense so as to include forms from New Guinea and New Britain, as was done in a similar paper on avian entozoa. (Johnston, 1910 c.)

Many of the following records, more especially those which give merely the generic name of a nematode infesting a certain host, are of little value, but for the sake of completeness, they have been tabulated. Dr. Sweet (1908) has already collected a number of earlier records and published them in her Census of Australian Entozoa. The greater part of the literature referring to our reptilian haematozoa has been brought together in papers by Dr. Cleland and myself. (Johnston and Cleland, 1910 a; 1911 a.)

I have mentioned synonyms of the accepted specific name of the host only in those cases where a recorder of the occurrence of a parasite has referred to the host under such name.

## OPHIDIA.

1. PYTHON SPILOTES Lacep, (syn. *Morelia spilotes*.)  
The Diamond Snake.

\*a *Hæmogregarina shattocki*, Sambon & Seligmann, 1907, p. 284; Sambon, 1907, p. 310; Sambon, 1909, p. 111; Dobell, 1908, p. 291 (*Hæmogregarina* sp.); Laveran, 1908, p. 103.

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\*a, denotes that the parasite is a Protozoon; b, that it is a Cestode; c, a Trematode; d, a Nematode; e, an Acanthocephalan; f, a Linguatulid.

Sambon's and Dobell's specimens were obtained in England, hence the original locality of the host is not recorded. As has been already pointed out (Johnston, 1909 *b*, p. 403), the snake must have come from the coastal district of New South Wales, if the popular and scientific names be correct.

*b i.*, *Bothridium pythonis*, Blainville—more commonly known under the name of *Solenophorus megaloccephalus* (*megacephalus*), Creplin.

Baird (1865 *a* p. 68 ; 1865 *b* p. 52) described a cestode under the name of *Bothridium arcuatum*, from this host. Monticelli and Crety (1891, reprint p. 17) after having examined Baird's original material stated it to be a synonym of Blainville's species. Krefft (1871, p. 214) referred to Baird's description. Specimens have been taken (Johnston 1910 *d*, p. 28) from diamond snakes killed near Sydney.

*ii.*, *Sparganum* sp.

I have several Bothriocephalid larvæ from the subcutaneous tissues of this host (Hawkesbury River). They resemble at least externally, those recorded here from the connective tissues of other reptiles such as *Python variegatus* (N.S.W. and Queensland), *Varanus varius* (Burnett River), *Varanus gouldii* (Burnett River), *Dendrophis punctulatus* (Burnett River), while an allied form is occasionally found in certain frogs between the muscles of the thigh—*Hyla cærulea* (Burnett River and Sydney), *Hyla aurea* (Sydney and Perth, West Australia). The parasites referred to as *Bothriocephalus masoni*, by Spencer (1892, p. 433) and by Hill (1905, p. 378) whose specimens were found in human beings, should perhaps be grouped merely as *Sparganum* sp., as their identity with Cobbold's forms is doubtful. Similar specimens of a *Sparganum* have been forwarded to me by Mr. Desmond, Government Veterinarian, Adelaide, who found them in the subcutaneous tissues of a fox in South Australia. Probably the adult forms of these occur in snakes.

*d.* *Ascaris* sp., Krefft (1871, p. 214).

A large Ascarid occurs fairly frequently in this species and in *P. variegatus* (N.S.W. and Queensland)

2. PYTHON SPILOTES var. *variegata*, Gray (syn. *Morelia variegata*). The Carpet snake.

Unlike *P. spilotes*, this reptile has a very wide range over Australia.

- a i., *Hæmogregarina shattocki*. Sambon & Seligmann. Johnston, 1909 *b*, p. 403; 1910 *b*, p. 42 (Enoggera, Brisbane); Johnston & Cleland, 1911 *a*, p. 487 (Burnett River).
- ii., *Hæmogregarina moreliæ*, Johnston, 1909 *b*, p. 404; 1910 *b*, p. 43 (Abrolhos, West Australia).
- iii., *Hæmogregarina megalocystis*, Gilruth, Sweet and Dodd, 1910, p. 234 (Victoria).

*H. megalocystis* is very like *H. bancrofti* from *Pseudechis australis* and *P. mortonensis* (*vide infra*), in regard to its detrimental effect on the parasitised erythrocyte. The other two haemogregarines will be referred to again (*vide infra*).

- b* i., *Bothridium pythonis*, Blainville—Johnston, 1910 *d*, p. 28 (N. S. Wales).
- ii. *Sparganum* sp. in subcutaneous tissues (Hawkesbury River).
- d* *Ascaris* sp., Krefft, 1871, p. 214. Occurs also in *Python spilotes*.

3. PYTHON AMETHYSTINUS, Schn.

- a* *Hæmogregarina amethystina*, Johnston, 1909 *a*, p. 257; 1910 *b*, p. 42. (Port Curtis, Queensland.)

As a result of having examined haemogregarines from a considerable number of reptiles, it has become evident to me that these haematozoa vary a good deal in form and size. I now regard *H. amethystina*, *H. moreliæ*, *H. shattocki* (from Australian pythons) and *H. pococki*, Sambon (from *Python molurus*) as being identical, and that they are all (as Dobell suggests in the case of Sambon's forms) synonymous with *H. pythonis* (Billet) Labbé. We cannot agree entirely with Dobell's suggestion that the generic name of the host might be added as a temporary specific name. We have adopted this method where convenient, but we have met with cases where this would be inapplicable. For example from species of *Pseudechis*, we have described two haemogregarines differing widely in regard to their

effect on the red cell; *Python variegatus* harbours at least two quite distinct forms; and then again we (J. & C., 1911 a) have met with a species in *Varanus Gouldii* which, to our minds, is certainly different from that usually met with in *V. varius*.

4. *DENDROPHIS PUNCTULATUS*, Gray. The green tree-snake.

a *Hæmogregarina dendrophidis*, Johnston & Cleland, 1910, a, p. 680 (Burnett River).

b *Sparganum* sp., from the mesentery and subcutaneous tissues—collected by Dr. T. L. Bancroft, Burnett River.

5. *DIPSADOMORPHUS IRREGULARIS*, Merrem.

All the following entozoa were collected by Dr. A. Willey in New Britain.

b *Phyllobothrium dipsadomorphi*, Shipley, 1900, p. 550.

d i., *Physaloptera obtusissima*, Molin; Stossich in Shipley, 1900, p. 559.

ii., *Physaloptera retusa*, Rud.; Stossich in Shipley, 1900, p. 559.

iii., *Diaphanocephalus appendiculatus* Molin; Stossich in Shipley, 1900, p. 560.

f. *Porocephalus tortus*, Shipley, 1898, p. 52; 1900, p. 563.

6. *DIEMENIA PSAMMOPHIS*, Schl. The whip snake.

No parasites have been described from this host though a mere mention of the occurrence of *Porocephalus* sp., *Physaloptera* sp., and *Ascaris* sp. has been made (Johnston, 1910, a, p. xviii; 1910 d, p. 309), Sydney.

7. *DIEMENIA RETICULATA*, Gray (perhaps more correctly *D. PSAMMOPHIS* var. *RETICULATA*).

This Western Australian reptile is sometimes known locally as a "spinifex snake." Krefft recorded the presence of some parasites but did not give any indication of the locality, in fact one is led to believe that the host came from Queensland or New South Wales. As a matter of fact, his material was from Western Australia. Dr. J. B. Cleland has been kind enough to hand over to me specimens

which he collected in North Western Australia, and I have had an opportunity of inspecting Krefft's collection also. The latter is very indifferently preserved.

*a Hæmogregarina* sp., Johnston & Cleland, 1910 *a*, p. 682. (N.W. West Australia.)

*d Physaloptera* sp., Krefft, 1871, p. 214.

I have a few specimens collected by Dr. Cleland.

*e Echinorhynchus* sp., Krefft, 1871, p. 214.

I have some immature echinorhynchus from the sub-peritoneal tissues (Johnston, 1910 *d*, p. 659) collected by Dr. Cleland.

*f Porocephalus* sp., Krefft (1871, p. 214) recorded the presence of *Pentastomum* in the lung of the above snake. 'His specimens are specifically identical with those which I have received (Johnston, 1910 *d*, p. 28) from Dr. Cleland. For the present they may be provisionally identified as *Porocephalus teretiusculus* (Baird), which they very closely resemble.

8. DIEMENIA TEXTILIS, Dum. & Bibr. The brown snake.

*a Trypanosoma* sp., Tyrie and Love, 1906, p. 408.

This record is based upon the following extract. "Dr. Love exhibited under the microscope a Trypanosome from the blood of a brown snake, sent by Dr. Tyrie." North Queensland.

*d Physaloptera* sp., Johnston, 1910 *d*, p. 309. (Sydney).

*e Echinorhynchus* sp., Johnston, 1910 *a*, p. xi; 1910 *d*, p. 659.

Adult forms in the intestine, and larval forms in the subperitoneal tissues. (Sydney; Hunter River.)

Bennett in his book "Wanderings in New South Wales, 1834," Vol. I., p. 215, refers to the presence of bright red worms one and a-half to two inches long, affecting the lung and perforating the stomach wall of the brown snake. The lung worm is possibly *Porocephalus teretiusculus*. The stomach worm may have been a *Diaphanocephalus* or other Strongyle.

9. PSEUDECHIS PORPHYRIACUS, Shaw. The Black snake.

*a Hæmogregarina pseudochis*, Johnston, 1909 *b*, p. 406; 1910 *b*, p. 43 (Sydney); Johnston & Cleland, 1911 *a*, p. 487 (Hawkesbury River).



- b i., *Proteocephalus gallardi*, Johnston, 1911 a, p 175 (from various districts of New South Wales and from Gippsland, Victoria). Previously recorded as *Ichthyotaenia* sp. (Johnston, 1910 a, p. xi.; p. xviii.)

This tapeworm also infests the Tiger Snake, *Notechis scutatus* (Sydney district).

- ii., *Sparganum* sp. Larval forms of a Bothriocephalid have been taken by me from the subperitoneal tissues (Sydney).

- c *Hemiurus* sp., from the intestine. Also previously recorded from *Denisonia superba* (Johnston, 1910 a, p. xviii) under the synonym *Apoblema* (Sydney district).

- d *Diaphanocephalus* sp. (*Kalicephalus* sp.) from the alimentary tract (Sydney).

- e *Echinorhynchus* sp., Johnston, 1909 c, p. 590. From the rectum. A common parasite (Hawkesbury River; Sydney).

- f *Porocephalus teretiusculus* (Baird).

This parasite infests the lungs of some of our venomous snakes and has generally been referred to as *Pentastomum teretiusculum*. Baldwin Spencer (1888, p. 110) first recorded it from the host from King Island as *Pentastomum* sp., but later (1892, p. 1) gave a full account of it under Baird's name. (Victoria.) Shipley (1898, p. 77) summarised Spencer's and Baird's accounts. I here record the occurrence of the parasite in New South Wales (Blue Mountains).

#### 10. PSEUDECHIS AUSTRALIS, Gray. A Northern Black Snake.

- a *Hæmogregarina bancrofti*, Johnston & Cleland, 1911 a, p. 486. Films kindly forwarded by Dr. T. L. Bancroft, from Eidsvold, Burnett River, Queensland.

- b i. *Proteocephalus* sp. (Eidsvold, Burnett River).

This cestode is closely related to but not identical with, *P. gallardi*, but a tapeworm which I have taken from *Denisonia superba* belongs to the same species as the parasite from this host.

- ii. *Sparganum* sp.

From the mesentery collected from a snake, forwarded by Dr. Bancroft. (Eidsvold, Burnett River).

## 11. PSEUDECHIS MORTONENSIS, De Vis.

*a* *Hæmogregarina bancrofti*, Johnston & Cleland, 1911  
*a*, p. 486. (Eidsvold, Burnett River.)

12. DENISONIA SUPERBA, Gunther. (Syn. *Hoplocephalus superbus*). The Copper-headed Snake.

*b* i *Piestocystis hoplocephali*, Hill, 1894, p. 49.

Occuring in cysts in the peritoneum around the intestine.  
 (N.S.W.)

ii, *Proteocephalus* sp., Johnston, 1910 *a*, p. xviii.

This cestode is specifically identical with that referred to above as occurring in *Pseudechis australis*, and differs only in minor details from *Proteocephalus gallardi*. Recorded from Sydney district under the synonym *Ichthyotaenia* sp.

*c* i. *Hemiurus* sp.

From the oesophagus (Sydney). Recorded as *Apoblema* sp. (Johnston, 1910 *a*, p. xviii). It also infests the Black Snake.

*d* *Trichosomum* sp., (Johnston, 1910 *a*, p. xviii). From the intestine. (Sydney.)

*f* *Porocephalus teretiusculus*, (Baird).

This pentastome was described by Baird (1862, p. 114) having been taken from the lung of a snake belonging to this species which had died at the London Zoological Gardens. Krefft (1871, p. 211) hereby mentioned Baird's species. B. Spencer (1892, p. 1) found the parasite in *D. superba* (Victoria) as well as in *Pseudechis porphyriacus*. Shipley (1898, p. 76) referred to its occurrence in this host. *Porocephalus* sp., recorded by me (1910 *a*, p. xviii) from the same host (Sydney district) belongs to Baird's species.

13. NOTECHIS SCUTATUS, Peters—syn. *Hoplocephalus curtus*.  
 D. & B. The Tiger Snake.

*b* *Proteocephalus gallardi*, Johnston.

Tapeworms which I have taken from a Tiger Snake killed near Sydney, have been identified as belonging to the same species as those from the black snake. *Notechis scutatus* is thus a newly recorded host for this entozoon. Kitson's reference (1904, p. 147) to the occurrence of a long cestode in this host is of no value.

- d Physaloptera* sp., Johnston, 1909 *d*, p. 590—from the stomach and duodenum (Sydney district).
14. ACANTHOPHIS ANTARCTICUS, Shaw. The death adder.  
*d Physaloptera antarctica*, Linstow, 1899, p. 15.  
(South Australia).
15. FURINA OCCIPITALIS, D. & B. The ringed snake.  
*d Diaphanocephalus*, sp. (Eidsvold, Burnett River).
16. A LARGE UNIDENTIFIED SNAKE—from the Bismarek Archipelago.  
*d i Physaloptera*, sp. Linstow, 1897, p. 286.  
*ii Ascaris papillifera*. Linstow, 1897, p. 281.

## LACERTILIA.

17. GYMNO DACTYLUS MILIUSII, Bory. (Syn. *Phyllurus miliusii*.)  
*d Ascaris* sp. Krefft, 1871, p. 214.
18. DIPOLO DACTYLUS VITTATUS, Gray, syn. *D. ornatus*, Gray.  
*f Porocephalus* sp. Recorded by Krefft (1871, p. 214)  
as *Pentastomum* sp.
19. ŒDURA TRYONI, De Vis  
*a i Hæmogregarina* sp.  
*ii Hæmocystidium* sp.
- Both were found by Dr. Cleland and myself in a film kindly forwarded by Dr. T. L. Bancroft (Eidsvold, Burnett River).
20. LIALIS BURTONII, Gray. The slow worm.  
*b Piestocystis lialis*, Hill, 1894, p. 61. (N.S.W.)  
*d Physaloptera* sp. Johnston, 1910 *a*, p. xviii.  
(Sydney.)

21. AMPHIBOLURUS MURICATUS, White.  
*d Strongylus paronai*, Stossich, 1902.
22. AMPHIBOLURUS BARBATUS, Cuv. The Jew lizard.  
*d Strongylus paronai*, Stossich.

I am referring to Stossich's species some Strongyles collected by Dr. Cleland in the Moree district, N.S. Wales.

23. PHYSIGNATHUS LESUEURII, Gray. The water dragon.  
*d Microfilaria* sp. Johnston & Cleland, 1911 *a*, p. 489.
- Found in blood smears forwarded by Dr. Bancroft (Eidsvold) Burnett River), who afterwards discovered the



adults in the mesenteric veins. The finding of filarial embryos in the blood of reptiles is rare, this being the only recorded instance as far as Australian reptilia are concerned.

24. *CHLAMYDOSAURUS KINGII*, Gray. The frilled lizard.

*d Strongylus paronai*, Stossich.

Some specimens taken by me from a frilled lizard forwarded by Dr. Bancroft (Burnett River), are provisionally referred to this species.

25. *VARANUS INDICUS*, Daud.

*b Palaia varani*, Shipley, 1900, p. 548.

*d Physaloptera varani*, Parona. Stossich in Shipley, 1900, p. 560.

Both species were collected by Dr. Willey in New Britain. In regard to *Palaia varani*, the account given does not allow of the genus being properly placed. It seems to me probable that *Palaia* is a synonym of *Proteocephalus*.

26. *VARANUS VARIUS*, Shaw. The monitor.

*a Hæmogregarina varanicola*, Johnston & Cleland, 1910 *a*, p. 683 (N.S.W.) ; 1911 *a*, p. 487. (Burnett River)  
*Hæmogregarina* sp. Gilruth, 1910, p. 36 (Victoria)  
is the same.

*b i Proteocephalus tidswelli*, Johnston, 1910 *a*, p. 103 ;  
1910 *b*, p. 87 (N.S.W.)

This species was first described as *Ichthyotaenia* (*Acanthotaenia*) *tidswelli*, but Benedict (1), La Rue (2) and others have shown that Weinland's genus has priority over Lonnberg's *Ichthyotaenia*. I have already shown (1910 *a*, p. 113-114) that Linstow's genus *Acanthotaenia* is a synonym of *Proteocephalus*.

ii *Sparganum* sp.

From the sub-peritoneal tissue. (Burnett River—collected by Dr. Bancroft.)

*d Physaloptera* sp—*P. varani*, Parona ?

Johnston, 1909 *e*, p. 115 ; 1910 *a*, p. xi ; 1910 *b*, p. 88 (N.S.W.)

(1.) Benedict, H.—On the Structure of Two Fish Tapeworms, from the genus *Proteocephalus*. Weinland.—Jour. Morphology XVI, p. 337 ; Studies from Zool. Lab. Univ., Nebraska, No. 33, Jan., 1900.

(2.) La Rue, G.—On the Morphology and Development of a New Cestode of the genus *Proteocephalus*. Weinland.—Studies Zool. Lab Univ., Nebraska, No. 95, Dec., 1909.

## 27. VARANUS GOULDII, Gray. Gould's Monitor.

*a* *Hæmogregarina gouldii*, Johnston & Cleland, 1911 *a*, p. 488. Found in films forwarded by Dr. Bancroft from Eidsvoid.

*b* i *Proteocephalus tidswelli*, Johnston.

Some fragments collected from a specimen (Burnett River) probably belong to this species.

ii *Sparganum* sp.

Specimens were forwarded to me by Dr. Bancroft (Burnett River) who found them in the subperitoneal tissues.

*d* *Physaloptera* sp.—*P. varani*, Parona? Johnston, 1910 *d*, p. 524.

I have specimens from this host from Queensland (Dr. Bancroft—Eidsvoid), West Australia (Dr. Cleland), Victoria (Mr. A. S. LeSouef) and New South Wales (T.H.J.)

## 28. VARANUS sp. From New Guinea.

*b* i *Proteocephalus biroi* (Ratz). Ratz, 1900 *a*, p. 658.

ii *Proteocephalus saccifera* (Ratz). Ratz, 1900 *a*, p. 658.

iii *Taenia mychocephala* (Ratz), 1900 *a*, p. 659.

The two former were described under the genus *Ichthyotaenia*. A description of the three species is given in Ratz, 1900 *a*, p. 657; 1900 *b*, p. 980; 1901, p. 329.

## 29. EGERNIA CUNNINGHAMI, Gray.

Krefft (1871, p. 214) mentioned finding worms in this host. They appear to belong to the Oxyuridae. (N.S.W.)

30. EGERNIA WHITII, Lacep. (Syn. *Lygosoma* (*Hinulia*) *whitii*, Steind.)

*d* *Ascaris* sp. Krefft, 1871, p. 214.

## 31. TRACHYSAURUS RUGOSUS, Gray.

*d* *Oxyuris tuberculata*, Linstow, 1904, p. 300 (Australia).

## 32. TILIQUA SCINCOIDES, White. The Common sleeping or Blue-tongued lizard.

*a* *Hæmogregarina tiliquae*, Johnston & Cleland, 1911, *a* p. 484. (Hawkesbury River.)

*d* *Physaloptera* sp. Johnston, 1910 *a*, p. xi (Sydney).

33. TILIQUA GIGAS, Schn., syn. *Cyclodus gigas*, Schn.

*d* *Physaloptera* sp. Krefft, 1871, p. 214.

Boulenger (Cat. Reptilia-Lizards, Edit. 2, III., p. 145) states that the localities from which this lizard is known are

New Guinea. Moluccas and Java, Australia not being mentioned.

34. *TILQUA OCCIPITALIS*, Peters. (Syn. *Cyclodus occipitalis*.)  
*d Physaloptera antarctica*, Linstow, 1889, p. 15 (South Australia).

35. *LYGOSOMA (HINULIA) TAENIOLATUM*, White.

*a i Hæmogregarina* sp. Johnston & Cleland, 1911 *a*, p. 479.

*ii Trypanosoma* sp. Johnston & Cleland, 1911 *a*, p. 479.

Both of these haemotozoa were found in a film forwarded by Dr. Bancroft (Burnett River).

*e Echinorhynchus* sp.

From the intestine. (Hawkesbury River, N.S.W.)

*f Porocephalus* sp.

Kreff (1871, p. 214) recorded the occurrence of *Pentastomum* in the lung.

36. *LYGOSOMA (HINULIA) QUOYI*, Dum. & Bibr.

*a Hæmogregarina hinuliae*, Johnston & Cleland, 1910 *a*, p. 684, (Hawkesbury River); 1911 *a*, p. 487 (Sydney).

*e Echinorhynchus* sp., Johnston, 1909, *d*, p. xxix. (Hawkesbury River). From the intestine.

37. *LYGOSOMA (HINULIA) TENUE*, Gray.

*d Physaloptera* sp., Johnston, 1910 *a*, p. xi. (Hunter River.)

#### CROCODILIA.

No entozoa have, as far as I know, been described from Australian crocodiles.

#### CHELONIA.

38. *CHELONIA MYDAS*, Linn. (Syn. *Chelone mydas*). The Green Turtle.

*c i Amphistoma scleroporium*, Creplin.

*ii Octangium sagitta*, Looss.

Neither of these trematodes had been previously recorded from Australian hosts. They were known from Mediterranean turtles. *Amphistoma scleroporium* is insufficiently known, Braun's single specimen (Braun, 1901, p. 56) which he referred to Creplin's species, being immature. It was 8.2 mm. long by 2.2 mm. broad and possessed only rudiments of the genitalia. Looss (1901, p. 623) in his descrip-

tion of *A. spinulosum* from *Chelone mydas* from Egypt, states that mature specimens are from 5 to 5.6 mm. long and are thus much smaller than Braun's specimen of *A. scleroporum*. Later (1902, p. 430) he referred to specimens 7.5 to 8 mm. long, about 1.6 mm. broad and 1 to 1.6 mm. in thickness, and mentioned that they were of a pale flesh-red colour when alive. He also stated that the species was unmistakably like Braun's form. My specimens (collected on Mast Head Island, at the southern end of the Barrier Reef by Mr. L. Harrison in October, 1910) are from 7.5 to 9 mm. long by from 2.4 to 3 mm. broad. The characters are those of *A. scleroporum*. The anatomy is strikingly like that figured by Looss (1902) for *A. spinulosum*, the main difference being that, in some of my specimens, the vitellaria extend a little further forward and the testes are more markedly lobed.

*Octangium sagitta* was originally described by Looss (1899, p. 772) as *Microscapha sagitta*, being transferred later to *Octangium* (1902, p. 685).

39. ERETHMOCHELYS IMBRICATA L. Syn. *Chelone imbricata* L.

Shipley (1900, p. 532) described a trematode which he regarded as belonging to *Monostomum trigonocephalum* Rud., the material having been collected by Willey (New Britain ?) Braun (1901) recognised that Shipley had had more than one species before him. He stated (p. 51) that *M. trigonocephalum* Shipley 1900, p. 532, pl. 54, fig. 1, did not belong to Rudolphi's species but to *M. rubrum* (p. 45); that the form figured on plate 44, figs. 1c, 3, 4, 5, 7, as well as *Cricocephalus delitescens* Looss (1899, p. 759) belong to *M. album*; and (p. 38) that *Pronocephalus trigonocephalus* Looss (1899, p. 756) as well as some of Shipley's forms belong to Rudolphi's species. In 1901 Looss (1901, p. 566) recognised that his *trigonocephalus* was distinct from Rudolphi's and consequently re-described it as a new species *Pr. obliquus*, while Rudolphi's species was made (1901, p. 567; 1902, p. 548) the type of a new genus *Pleurogonius*. He stated (1902, p. 549) that some of Shipley's forms, viz., those described and figured, belonged to this species, while certain forms which were figured but not described, belonged to *Cricocephalus albus* (K. & Hass.) Looss, which Looss admitted



(p. 532) to be identical with his *C. delitescens*; and that (p. 527) Braun's account (1901) of *M. trigonocephalum* included at least two distinct species, *Pronocephalus obliquus* Looss (on page 40) and *M. trigonocephalum* Rud. (on p. 3) and in all probability (according to Looss, 1902, p. 557 footnote) includes also a third form, *Epibathra crassa* Looss. He regarded *M. trigonocephalum* of Van Beneden 1859 and of Walter, 1893, as belonging to *Pleurogonius longiusculus* Looss (1901, p. 568; 1902, p. 558).

From the foregoing it appears that Willey's collection really contained the following:—

i *Pleurogonius trigonocephalum* (Rud.) Looss.

ii *Cricocephalus albus* (K. & Hass.) Looss.

Braun believed that *Monostomum rubrum* K. & H. was also present. Looss (1902) does not refer to this species.

#### 40. A SEA TORTOISE.

The following trematodes were identified by Braun (1899) from material collected in the Bismarck Archipalego by Dahl. He dealt with a number of other forms from Chelonians in the same paper.

i *Distomum gelatinosum* Rud. (p. 716).

ii *D. irroratum*, Rud. (p. 717).

iii *Monostomum album*, K. & Hass. (p. 723).

iv *M. rubrum*, K. & Hass. (p. 724).

*D. gelatinosum* is called *Rhytidodes gelatinosus* by Looss (1901, p. 563; 1902, p. 445); *D. irroratum* becoming *Pachypsolus irroratus* (Rud.), Looss (1901, p. 55; 1902, p. 485); and *M. album*, *Cricocephalus albus* (Looss, 1902, p. 532).

Braun (1899) has been misquoted by Dr. Sweet (1908 pp. 459, 460, 463, 464) who includes the following species in error as having been amongst those collected in New Britain by Dahl.

i *Amphistoma scleroporum*, Crepl. (p. 725).

ii *Distomum amphiorchis*, Braun (p. 719). *i.e.*, *Orchidasma amphiorchis* (Braun) Looss, 1901, p. 560; 1902, p. 463.

iii *Distomum anthos*, Braun (p. 720)—*Calycodes anthos* (Braun) Looss, 1901, p. 565; 1902, p. 458.

iv *Distomum cymbiforme*, Rud. (Braun, p. 720).—*Phyllodistomum cymbiforme* (Rud.) Braun, 1901,



- p. 10—*Plesichorus cymbiforme* (Rud.) Looss, 1901, p. 555; 1902, p. 469.
- v *Monostomum reticulare* v. Ben., Braun, 1899, p. 725  
—*Microscaphidium reticulare* (v. Ben.) Looss, 1902, p. 691.
- vi *Monostomum trigonocephalum* (Rud.) Looss, 1901 p. 567; 1902, p. 548.
41. CHELODINA LONGICOLLIS, Shaw. The long-necked Tortoise.
- α i *Hæmogregarina clelandi*, Johnston. Johnston & Cleland, 1911 a, p. 482. (Burnett River—Dr. Bancroft; Murray River, South Australia). Originally described from *C. oblonga*.
- ii *Hæmocystidium chelodinæ*, Johnston & Cleland, 1909 a, p. 97; 1910 b, p. 38 (Sydney).
- iii *Trypanosoma chelodina*, Johnson (A. E.), 1907, p. 26 (Murray River, South Australia); Johnston & Cleland, 1911 a, p. 479 (Murray River, South Australia; Burnett River—Dr. Bancroft).
42. CHELODINA OBLONGA, Gray.
- α i *Hæmogregarina clelandi*, Johnston, 1909, p. 407, 1910 b, p. 44; Johnston & Cleland, 1910 a, p. 67 footnote; 1911 a, p. 482 (Perth, West Australia).
- ii *Hæmocystidium chelodinæ*, Johnston & Cleland, 1911 a, p. 482 (Perth, West Australia)—originally described from *C. longicollis*.
43. EMYDURA KREFFTII, Gray.
- α i *Hæmogregarina clelandi*, Johnston. Johnston & Cleland, 1911 a, p. 483 (Burnett River).
- ii *Trypanosoma chelodina*, Johnson (A. E.).  
Johnston & Cleland, 1911 a, p. 480 (Burnett River.)

In our paper (1911 a) we have given other localities in Queensland from which parasitised blood films were taken by Dr. Bancroft, viz., Enoggera and Petrie's Creek. The species of tortoise from these localities has been identified as *Emydura macquariæ*, hence the information contained in that paper will need to be modified in accordance with the details as to host and localities contained in this communication. *Hæmocystidium chelodinæ* recorded by us

(1911 *a*, p. 481) from this host from Petrie's Creek, near Brisbane, thus should be listed under *E. macquariæ* (*vide infra*).

44. EMYDURA MACQUARIÆ, Gray.

*a* i *Hæmogregarina clelandi*, Johnston.

ii *Hæmocystidium chelodinæ*, Johnston & Cleland.

iii *Trypanosoma chelodina*, Johnson (A. E.).

These three hæmatozoa were recorded (J. & C., 1911 *a*) as being taken from *E. Krefft i* from Petrie's Creek. The host is really *E. macquariæ*, a very closely related species. All of the above were found in a blood smear taken in this locality by Dr. Bancroft (J. & C., 1910 *a*, p. 679).

45. ELSEYA DENTATA, Gray.

*c* *Amphistoma* sp. Krefft, 1871, p. 213.

*d* *Ascaris* sp. Krefft, 1871, p. 213.

From Northern Queensland Rivers.

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